AN ANALYSIS OF THE UTILIZATION OF OVERTIME VERSUS HIRING ADDITIONAL PERSONNEL

FIRE SERVICE FINANCIAL MANAGEMENT

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ABSTRACT

The city of Riverside Fire Department has experienced dramatic increases in its overtime budget and is confronted with continual pressure from city leaders. The problem that prompted this research was that the overtime budget had grown to an exorbitant amount and continuously created apprehension as well as concern with city leadership throughout the fiscal year. The purpose of this applied research project was to determine whether it was more cost effective to hire additional personnel or continue to utilize firefighters working overtime to fill shortages. Overtime expenses often become the target of cuts when financial conditions deteriorate.

Historical and evaluative research methods were used in order to answer the following questions:

1. What are the costs associated with hiring additional personnel to fill shortages in the Operations Division?
2. What are the annual costs for the position of firefighter, firefighter/paramedic, engineer and captain?
3. Are there enough vacancies on a daily basis to justify additional personnel?
4. Is it more cost effective to hire additional personnel versus paying overtime to current personnel?

The procedures used for this research project encompassed the examination of published articles, books, applied research papers, personal interviews, and an analysis of historical data within the Riverside Fire Department.

The results revealed it was slightly less expensive to pay overtime versus hiring additional personnel to staff positions. It was also determined there were enough

vacancies on a daily basis to justify additional personnel. Additionally, the research identified the potential for firefighter injuries due to fatigue caused by working long shifts.

The recommendations are that the Riverside Fire Department purchase or develop a computer staffing program to analyze personnel staffing, hire additional personnel to fill scheduled leaves, limit the amount of consecutive hours worked, analyze sick leave usage, keep vacant authorized positions filled and continue to evaluate overtime usage.

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INTRODUCTON

The cost of public safety is continuing to rise and the revenue to pay for these services is becoming scarcer due to the public outcry for tax relief, the loss of local revenues and the shift of financial power from local government to the state. On top of lower revenues the public is demanding more efficiency and cost effectiveness in government. In response to lower revenues mayors and city managers are continually slashing away at fire department budgets. “Each month, the situation becomes more desperate. There seems to be no limit on how far the budget cutters are willing to go” (Bruno, 1993, p.10). On the other side, the dispute over minimum staffing of fire companies continues. Labor organizations such as the International Association of Firefighters (IAFF) are advocating increased staffing levels to meet the 2-in/2-out OSHA 1910.134 standard and the new NFPA 1710 standard. If the staffing component of the NFPA 1710 standard is adopted and implemented the financial burden could be tremendous to many communities that provide fire protection.

The city of Riverside Fire Department (RFD) is a fully paid career fire department that has minimum staffing levels within the Operations Division. In 1991 the Riverside City Firefighters Association (RCFA) negotiated minimum staffing levels of 53 personnel per day. The Department currently provides staffing over the minimum staffing level established by the Memorandum of Understanding (MOU). Currently, shortages in daily staffing caused by vacation, sick leave, holidays, etc. are covered by off-duty personnel working overtime at one and a half-times normal hourly rate. The problem that prompted this research is that the overtime budget has grown to an

exorbitant amount and continuously creates apprehension as well as concern with city leadership throughout the budget year.

The purpose of this applied research project is to determine whether it is more cost effective to hire additional personnel or continue to utilize firefighters working overtime to fill shortages. Evaluative and historical research was employed to answer the following questions:

1. What are the costs associated with hiring additional personnel to fill shortages in the Operations Division?
2. What are the annual costs for the position of firefighter, firefighter/paramedic, engineer and captain?
3. Are there enough vacancies on a daily basis to justify additional personnel?
4. Is it more cost effective to hire additional personnel versus paying overtime to current personnel?

BACKGROUND AND SIGNIFICANCE

The city of Riverside Fire Department is a fully paid career fire department of 218 personnel that provides services to a population of 265,000 people. The City encompasses approximately 80 square miles of diverse terrain. The Riverside Fire Department has, like many fire departments, expanded its services to include hazardous materials response, technical rescue, advanced medical services and many other services as we engage an all-embracing public safety emphasis. The primary focus on services is providing a community based fire department.

In 1999 the Riverside City Council increased the fire department's staffing in the Operations Division by 30 firefighters. The additional staffing created four person crews

on eight of the thirteen engine companies. This was the first increase in unit staffing in 25 years and a major increase to the fire department budget (R. Richmond, personal communication, July 17, 2001). The increase in staffing was approved to provide four personnel on the first arriving unit in order to comply with the "two-in/two-out rule" of the Federal OSHA respiratory requirements for interior fire attack. The City Council did not want any delays in initiating an interior fire attack because of insufficient personnel with the first arriving unit.

The staffing of the Riverside Fire Department is authorized by City Council action. Currently the Department has 218 authorized positions operating out of 13 fire stations and one administration/fire prevention office. The personnel consist of 52 captains, 48 engineers, 42 firefighters, 48 firefighter/paramedics, 1 EMS coordinator, 3 battalion chiefs, 3 division chiefs, 1 deputy chief, 1 fire chief, 9 administrative personnel, 1 fire marshal, 1 deputy fire marshal and 8 fire inspectors. The Operations Division has 189 of those personnel assigned to 13 fire stations. Operations personnel work a traditional 24-hour shift, 56-hour workweek. The remaining 29 personnel work a standard Monday through Friday 40-hour workweek.

All captains, engineers, firefighters and firefighter/paramedics are members of the Riverside City Firefighter Association (herein referred to as RCFA). In 1991 RCFA negotiated minimum staffing levels within the Operations Division. Daily staffing per Memorandum of Understanding (MOU) consists of 16 captains, 16 engineers, and 20 firefighters (52 personnel). If any of the personnel are off duty for any reason during their scheduled shift, a vacancy or shortage exists. In 1999 the City Council adopted a paramedic program, and later that same year, increased the daily staffing by 10

firefighters to support the 2-in/2-out OSHA mandate. This increase in staffing has not been recognized by MOU as the minimum staffing level. However, the Department currently staffs at the increased staffing level of 63 per day which includes a shift battalion chief.

Prior to 1991 the department had extra personnel assigned to the Operations Division that provided coverage for personnel on vacation. Those personnel consisted of three captains, three engineers and six firefighters and were referred to as swing personnel. One captain, one engineer, and two firefighters were assigned to each of the three shifts to cover personnel on vacation. Operations personnel selected their vacation in October for the following year. Selection was based on seniority and only one captain, one engineer, and two firefighters were allowed off simultaneously which limited vacation selection. Those with low seniority would rarely receive a desirable date for vacation.

In 1991 the RCFA negotiated the elimination of the swing personnel that provided vacation coverage. The RCFA presented that it was less expensive to pay overtime than have additional personnel fill vacations. This enabled personnel to take vacation anytime they wanted. Any member wishing to take a vacation day only had to find someone of equal rank willing to cover for him or her at overtime. Personnel working overtime would provide the vacation coverage. This elimination of personnel also created desired overtime for all personnel in the Operations Division. The overtime budget within the Operations Division has increased from 1.2 million in 1991 to its current amount of 3.4 million. Additionally, due to MOU benefits, personnel in the Operations Division can work an unlimited amount of shifts/hours without any time off. It is not uncommon for

an operations firefighter to work 96 hours or even 360 consecutive hours without a day off. Personnel can conversely take an unlimited amount of time off through personal shift trades with personnel of equal rank.

The results of this research will be very important to the department for future funding and staffing levels. The economic condition of our region is starting to decline and future revenue projects are grim. The deteriorating economy will weaken city finance to a point where budget cuts will be unavoidable. The overtime budget has been a continual subject of controversy with city leaders. Any budget cut could affect staffing levels and the current operations of the fire department. Budget reductions could impact current projects, programs and the overall mission of the city of Riverside Fire Department. Mims found that "Many local governments, faced with increasing costs and decreasing or static tax revenues, are emphasizing the need for efficiently operated public services. This has created a pressure for change" (1999, p. 10). Additionally, this research could raise concern regarding safety. Fatigue resulting from working extended periods of time will render a person less capable of performing their duties both mentally and physically.

This research project was completed according to the applied research requirements of the National Fire Academy's Executive Fire Officer Program. The problem addressed by this research project related specifically to Unit VI of the Fire Service Financial Management course titled: "Analysis" (NFA, 1997). This unit stressed the difficult problems chief officers' face in deciding how public resources are to be allocated. The overtime budget has become a major concern with city leadership and no

sensible policy change can be made or recommended without careful analysis of the advantages and disadvantages of each course of action.

LITERATURE REVIEW

"The Executive Fire Officer of today is continually looking for ways to meet the increased demands for service while maintaining a funding level for personnel and equipment that the community is willing and able to fund" (Clymer, 1999, p. 11). This is a process described by Coleman as a "constant local government quest for cost-effective ways of achieving the various aspects of fire protection, including public safety officers, combination departments, regionalization and the development of intervening strategies" (1990, p. 47). As the demand for services increases leaders must become innovative and examine current and alternative staffing methods. They must be "willing to examine different ways of administering and allocating restrictive budgets" (Brown, 1998, p.8).

The staffing of fire departments and the minimum unit staffing levels continue to be a controversy within the fire service (Bruno, 1993). The most costly portion of a professionally paid career fire department is personnel cost. "The budget for a paid – labor fire department is composed mostly of salaries – 90 percent, in fact. This is a constant and fairly straightforward fact" (Brunacini, 1992, p. 28). Maintaining a minimum staffing level often requires the use of overtime to cover vacancies, even though we have additional personnel for coverage (M. Boomgaarden, personal communication, October 12, 2001).

Overtime spending, in fact, is becoming an accepted practice of staffing emergency units. "Overtime remains a key way of controlling staff levels to ride out revenue rollercoasters" (Perlman, 1997, p. 43). However, because of excessive overtime

many firefighters are earning more in overtime than their regular salary. "Compensation and morale issues are likely to emerge when firefighters become the highest-earning employees in the city due to overtime earnings. That always generates bad publicity at contract time, and the total cost of personnel makes it difficult at budget time" (Granito, 1990, p. 43).

Mims identified in her research an ensuing problem with excessive overtime spending. Her city officials "continually express concern that the fire division's overtime spending is too high" (1999, p. 4). Her city officials also believe the correction to overtime spending is the implementation of twelve-hour shift schedules. Rule (1997) has the opinion that the 10-hour / 14-hour night is more effective and productive than the 24-hour shift. Maurno (1996) discusses fire departments that have gone to the 24-hour shift cite morale as the key benefit of the 24-hour shift. He also notes that overtime can be expensive with the 24-hour shift schedule. Rule (1997) cites some of the advantages of the 10-hour / 14-hour nights as lower usage of sick leave, a reduction in overtime and improved safety for fire personnel. Mims (1999) found disadvantages and advantages to the many variations of work schedules. The most significant disadvantages of the standard 24-hour shift is overtime can be expensive and personnel safety is a concern. Firefighters can become tired and weary working busy 24-hour shifts therefore increasing their chances for injury. The highest incidents of injuries occur from fatigue and disruptive eating patterns due to shiftwork. (Glazner, 1996). Mims found the "advantages to the 12-hour shift was lower overtime expense, use of fewer sick days, and an increase in firefighter safety" (1999, p. 14).

In evaluating whether it was less expensive to hire additional personnel or pay overtime at one and one half times Brown (1998) found it was 13.10% less to pay overtime than hire additional personnel. This percentage was based on the cost of overtime to the cost of employee salary, benefits and the expense of hiring new personnel. "Hiring costs include all costs associated in advertising positions, screening applications to evaluate their qualifications, and processing successful applicants" (Brown, 1998, p. 9). Other costs he considered when hiring personnel include:

> The explicit cost of employing individuals to serve as trainers and the cost of material used up during the training process; the implicit or opportunity costs of the trainees' time (while individuals are undergoing training they are not producing as much output as they could if all their time was devoted to production activities); and the opportunity cost of using capital equipment and experienced employees to do training in less formal training situations (1998, p.10).

Additional costs of full time personnel consist of benefits which can include holiday pay, vacation and sick leave, uniforms and safety equipment, workers' compensation insurance, retirement benefits and a variety of other benefit options that vary by community. All of these must be considered in figuring the total cost of hiring and adding full time personnel. Brown determined after reviewing all employee costs "that use of an overtime program would be financially beneficial to the District" (1998, pg. 15). M. Boomgaarden also found that at one point paying overtime was less expensive than hiring additional staff when their retirement system was at a high rate (personal communication, October 12, 2001).

Clymer (1999) recommended in his research a college student live-in program as a cost effective means to increase staffing and offset the need to hire additional personnel. Clymer concluded that "the student live-in program is significantly more cost-effective than the traditional method of staffing using full-time employees" (1999, p. 50). However, he also discussed that the live-in program should not be used to fill scheduled or unscheduled vacancies of full-time career personnel. Their union would not support such a program that affected overtime of full time personnel.

O'Connell (2000) found that the use of overtime in his department had reached a point of diminishing returns. His study concluded the usage of overtime in only a couple of years was less costly than hiring additional personnel. O'Connell advocated that "limited and judicious use of overtime spending coupled with strategic planning, data analysis and readily retrievable information are essential for the responsible management of municipal financial resources" (2000, pg. 30).

Overtime costs for fire departments occur due to maintaining some form of minimum staffing levels. Vacations, sick leave, injuries, holidays, major incidents, training and many other benefits affect daily staffing levels. Selberg (1992) found it was necessary to determine the variables that will affect overtime cost and to what extent. Variables that are difficult to estimate are nonscheduled shortages such as injuries and sick leave. He used historical data to estimate nonscheduled shortages that sequentially produced overtime. Selberg stated " it is necessary to determine the average percent of time (probability) that various numbers of persons are off at a given time" (1992, pg. 9). He determined a breakeven point for hiring additional personnel or paying overtime. He concluded it was more cost effective to hire additional personnel to a breakeven point that

he determined for his organization. Once the breakeven point was exceeded it was more cost effective to pay overtime. Tharp (1998) used a probability distribution formula to determine the optimal number of full time personnel that should be maintained to meet the daily staffing requirements.

There are drawbacks to paying overtime. "Overtime pay can be insidious. Once it becomes routine, it's hard to cut and often even harder to control. It becomes, in effect, a way of life" (Perlman, 1997, p. 43). Another problem Perlman identified was "employees may become physically or mentally less capable if they work long hours for extended periods of time" (1997, p. 48). Glazner (1996) found a correlation to firefighter work schedules and injuries with fatigue being associated with those injuries and mistakes of firefighters.

The literature review provided many assorted positions on paying overtime or hiring additional staffing. It was evident from the research of others that data collection and analysis surrounding staffing was not a customary practice. The majority of researchers had to manually review payroll and staffing records. Both Brown (1998) and O'Connell (2000) had difficulty obtaining staffing data to render a determination of hiring or paying overtime. They suggested the purchase of an automated data program to provide administration with the information to make the best decision regarding staffing and expenditures.

It is obvious from the amount of recent research that many fire departments are concerned with the cost and the public perception of paying firefighters overtime to staff emergency units. Many researchers had the same goal, to determine the most cost-effective staffing mechanism that would reduce overtime. The previous researchers on

this subject spent a considerable effort on analyzing employee leaves such as vacation, sick leave, holiday, and holiday time. This influenced this author's method of analysis in determining the cost effectiveness of overtime versus hiring additional staffing.

PROCEDURES

This research project employed historical research to examine written documents, policies, staffing requirements, memoranda, and correspondence. Evaluative research was utilized to determine costs associated with benefits, salaries and ancillary personnel costs in order to determine if it is less expensive to pay overtime or hire additional personnel to fill vacant positions. The topic selected was based on personal experience and observation of the persistent apprehension, concern and questioning from city leadership regarding the use of overtime and the elevated salaries of those working overtime. Many of those working overtime are out-earning department heads.

The research procedure used in preparing this paper began with a literature review at the Learning Resource Center (LRC) in the National Emergency Training Center (NETC) during April of 2001. Additional literature was obtained through the Interlibrary Loan Program (ILP) and was delivered to the Riverside Public Library in Riverside, California. Literature was also used from the library at the Riverside Fire Department. Historical data was obtained from the city of Riverside computer payroll system and internal computer software programs within the fire department. The literature review included examination of journal articles, books, Riverside Fire Department memoranda, records and correspondence, National Fire Academy applied research papers and internal city documents that identify working conditions and benefits of the Riverside City Firefighters' Association. Additionally, on October 12, 2001 subject material specific to

California fire departments was obtained from Fire Chief Marc Boomgaarden of the Yuba City California Fire Department. Chief Boomgaarden obtained subject information through an e-mail request to members of the California Society of Municipal Finance Officers (CSMFO). CSMFO is a statewide organization serving all California municipal finance professionals. Chief Boomgaarden was selected because of his recent research for his organization on this topic.

The literature review revealed several Executive Fire Officer papers on the subject of staffing and overtime. This fact indicates that this is not just a local problem, but it is indicative of a nationwide quandary. The literature provided information and analysis techniques on overtime and staffing, as well as some recommendations to reduce overtime expenditures.

On July 17, 2001 a personal interview was conducted with Mel Gutierrez Administrative Services Manager of the Riverside Fire Department. He was selected for the interview because he is the fire department budget specialist. He was able to provide valuable information concerning staffing overtime and benefit cost. On July 17, 2001 a personal interview was conducted with Division Chief Ronald Richmond. He was selected because of his familiarity of historical practices within the fire department.

Limitations and Assumptions

The research was limited by the lack of substantive professional articles relating specifically to the problem of paying overtime versus hiring additional personnel. Many of the professional articles researched only provided generalized information in relation to the problem and minimal possible solutions. The benefit package variations among communities greatly affect compensation and leads to a convoluted comparison.

The data analysis was limited due to the fact that the authorized staffing levels have been increased and there is limited historical data readily available to analyze with the current staffing configuration. Additionally, the Department purchased "Telestaff" a computer-staffing system in late 1999. Prior to this computer system, staffing records were manually recorded in a log maintained by the shift battalion chief. The abilities of the Telestaff Program are limited in generating staffing reports. Staffing records were extracted from the Telestaff Program and data was manipulated using Crystal Reports, a reporting software and then was placed into a Microsoft Excel spreadsheet.

Staffing projections were developed utilizing staffing records for fiscal year 2000/2001. The procedures used to complete this project were based on the assumption that all authors referenced performed objective and unbiased research in the preparation of their work. Further it is assumed that for this research overtime staffing is based on a minimum staffing level. In analyzing complete costs for new employees training costs were not considered. All department training occurs on-duty with the company officer and crew. It can be assumed that the entire crew benefits from any training. All personnel are required to participate in 40 hours of training per month. Additionally, in conducting the research, it was determined these costs are minimal when factored over the average 28-year firefighter career.

Definition of Terms

For the purpose of this project the following definition of terms is included to eliminate any ambiguous terms or concepts:

Overtime: Any time worked in excess of an employee's normal 56-hour workweek (excludes shift trades).

FLSA: Fair Labor Standards Act—Federal law regulating employees work hours and overtime.

Shift: A continuous 24-hour work period that is common in the fire service.

Shift Trade: The ability to trade your scheduled shift with another individual of equal rank. There is no pay incentive involved. It is an agreement between the two parties involved.

Sick Leave: Leave used by the employee for personal illness or injury only.

Minimum Staffing Level: The minimum amount of personnel that must be on duty each and every work shift.

Two-In/Two-Out Rule: Federal OSHA rule that requires a minimum of four firefighters be assembled on the fireground prior to initiating an interior fire attack.

RESULTS

The results of the research was determined by examining staffing records and financial records within the city of Riverside Fire Department, Finance, and Human Resources Departments. The research guided the philosophy, and general analysis methods to answer the following research questions. The purpose of these questions was to determine if it was more cost effective to hire additional personnel or continue to pay overtime to fill vacant positions.

1. What are the costs associated with hiring additional personnel to fill shortages in the Operations Division?

Due to the recent increase in daily staffing the fire department has hired over 40 personnel in the last 18 months. From this recent hiring the following associated costs were determined. The cost of hiring those personnel include all costs in meeting to

determine prerequisite requirements, advertising positions, screening applicants to evaluate their qualifications for the position, and testing those most qualified that meet the prerequisite requirements. Testing includes administering a written examination and several days of conducting oral interviews to rank candidates. Physical strength testing is no longer performed by the city but a prerequisite requirement of the candidate. Candidates are tested for physical strength through a recognized testing program available at several community colleges. Successful candidates are given a physical ability certificate that is valid for six months. Cost for hiring new firefighters can be broken down into indirect and direct cost. Indirect cost would be those costs incurred by the Human Resources Department but not charged directly to the fire department. The costs incurred by the Human Resources Department are $646 and are identified in Table 1. Direct costs are those costs expended by the fire department.

Table 1

Human Resources Costs

Advertisement of Position	$ 30.00
Application Review	$ 100.00
Application Data Entry	$ 50.00
Application Status Notification	$ 25.00
Written Exam Administration	$ 147.00
Written Exam Status Notification	$ 25.00
Physical Examination	$ 269.00
Total Human Resources Charges	$ 646.00

The top candidates selected for consideration are forwarded to the fire department and are advanced into a background evaluation to ensure a proper fit within the organization. The background evaluation consists of a pre-employment questionnaire, polygraph evaluation, criminal and credit check, psychological and medical evaluation.

Successful candidates are then offered a position and outfitted with safety equipment and uniforms. The direct costs to the fire department associated with hiring each new firefighter are $ 3,707 and are detailed in Table 2. The total indirect and direct cost for each new firefighter is $4,353.

Table 2

Direct Department Costs

Staff Time for Oral Panel	$ 450.00
Background Credit Report	$ 25.00
Background Reference Check	$ 25.00
Background Education Check	$ 25.00
Background Employment Check	$ 25.00
Review of Completed Background Packet	$ 35.00
Polygraph Test	$ 100.00
Psychological Examination	$ 200.00
Applicant Fingerprinting	$ 46.00
New Employee Uniforms/Safety Gear	$ 2,801.00
Total Direct Costs	$ 3,707.00

2. What are the annual costs for the position of firefighter, firefighter/paramedic, engineer and captain?

The annual cost for the various positions under consideration include an analysis of the personnel salaries (exclusive of overtime) and supplementary costs such as benefits. The benefits cost include health and dental benefits, pension benefits, life insurance, workers' compensation charges, Medicare, negotiated benefits such as vacation and holiday time, average sick leave usage, and other direct costs such as hiring costs, uniforms and safety equipment were projected. Costs that are not considered are the administrative work hours, training costs and other associated costs of doing business.

An analysis of budget documents was conducted and determined the annual cost for the position of firefighter, firefighter/paramedic, engineer, and captain (see Appendix

A). The results for fiscal year 2001/2002 are $85,534 for firefighter, $91,405 for firefighter/paramedic, both of which include the initial hiring cost, $95,567 for engineer and $107,384 for captain. The costs were also projected out to include the negotiated raises for fiscal years 2002/2003 and 2003/2004. The complete hiring cost, new uniforms and safety equipment were only calculated for October 2001 for firefighter and firefighter/paramedic. Subsequent years in Appendix B included ongoing replacement costs of uniforms and safety equipment only. The projected salaries are calculated at the top salary range for the position. In considering hiring costs new employees would be hired at a lower salary range and would negate the hiring cost along with the safety gear and uniform expenses.

3. Are there enough vacancies on a daily basis to justify additional personnel?

An analysis of staffing records for fiscal year 2001/2002 determined there was a wide variance of vacancies or shortages on a daily basis. Overtime hours were obtained per day and by rank and listed in a spreadsheet for analysis (see Appendix B). The overtime hours were also broken down into 24-hour shifts to help determine appropriate staffing to reduce overtime coverage. The daily shortages in the fire captain position ranged from an uncommon low of no captains off to a high of 12 captains off-duty per shift (see Appendix B). The fire engineer position ranged from a low of no engineers off duty to a high of 16 engineers off duty per shift. The firefighter position ranged from one day of no firefighters off to a high of 18 firefighters off-duty. The firefighter/paramedic position ranged from a low of no firefighter/paramedics off to a high of 11 off-duty. The vacancies were caused by sick leave, industrial injuries, military leave, vacant positions,

bereavement leave, and vacation and holiday time benefits. Many of the daily openings in the position of firefighter and firefighter/paramedic were due to vacancies of authorized positions. If the authorized vacant positions were filled there would be a significant reduction in the overall overtime hours. The captain and engineer openings would remain the same.

Hiring additional personnel or overstaffing more than the lowest hours would create days in which the Department would be staffed over the mandatory daily staffing level. This would create additional personnel expenses. The analysis also showed that if vacation and holiday time were scheduled throughout the year the vacancies would be more uniform throughout the year. This would provide a more uniform amount of personnel off-duty per shift and would allow the daily minimum of personnel to be increased.

4. Is it more cost effective to hire additional personnel versus paying overtime to current personnel?

To determine the cost effectiveness of paying overtime versus hiring additional personnel an analysis was performed on the annual salary and annual total compensation. The costs were broken down into an hourly rate for comparison. The hourly salary for the various positions can be determined by the annual regular salary divided by the 2,912 hours scheduled per year inclusive of any benefits. The annual salary can be referenced in Appendix B and shows the regular salary at $53,697 for firefighter. The hourly rate of $18.44 was determined by dividing the 2,912 hours scheduled per year by the annual salary. The $18.44 hourly rate was then multiplied by the 1.5 overtime rate for an hourly overtime rate of $27.66 for firefighter (see Table 3). This would be the rate or cost per

hour to the city for a firefighter working overtime to fill a vacant position. The hourly overtime rate or costs for the position of firefighter/paramedic is $29.83, fire engineer is $31.37 and fire captain is $36.31 (see Table 3).

Table 3

Annual Salary - Hourly Rate

	Salary	Hourly Rate	Overtime Rate
Firefighter	$ 53,697	$ 18.44	$ 27.66
Firefighter/Paramedic	$ 57,908	$ 19.88	$ 29.83
Fire Engineer	$ 60,894	$ 20.91	$ 31.37
Fire Captain	$ 70,490	$ 24.21	$ 36.31

In comparison, the fully burdened hourly rate for a firefighter can be determined by dividing the complete annual compensation $81,799, inclusive of benefits, but exclusive of the hiring cost by the 2,912 hours scheduled per year. The fully burdened hourly rate or cost to fill a firefighter position is $28.09 per hour. The hourly rate or costs for the position of firefighter/paramedic is $30.11, fire engineer is $32.82 and fire captain is $36.88 (see Table 4). Benefit costs are not paid for personnel working overtime.

Table 4

Total Compensation – Hourly Rate

	Salary	Hourly Rate
Firefighter	$ 81,799	$ 28.09
Firefighter/Paramedic	$ 87,671	$ 30.11
Fire Engineer	$ 95,567	$ 32.82
Fire Captain	$ 107,383	$ 36.88

The results of the analysis show that it is currently less expensive to pay overtime by 43 cents per hour for firefighter, 28 cents for firefighter/paramedic, $1.45 for fire engineer, and 57 cents per hour for fire captain.

DISCUSSION

The literature review revealed a division on whether it was more cost effective to pay overtime or hire additional staff to fill positions in the Operations or Suppression Division. Researchers such as (Mims, 1999; O'Connell, 2000; Perlman, 1997) found that there were no overall cost savings recognized by using overtime to fill positions. The results of this research indicated there was a very slight financial advantage within the Riverside Fire Department in using overtime to fill positions. Others such as (Brown, 1998; Tharp, 1998) also found within their research that using an overtime program rather than hiring additional personnel would be more beneficial or cost effective to their departments.

Brown (1998) found it was less expensive to pay overtime in his organization based on the costs of employee benefits and salary. The benefits and associated cost are one of the primary factors in determining the cost effectiveness of overtime versus hiring additional personnel. History has shown that the growing cost of benefits will continue to increase. Increased benefit costs will make the use of overtime less expensive and more and more attractive as government looks to reduce costs. The other significant element to review or consider is whether the organization has enough open positions on a daily basis to support an additional person. The lack of a daily shortage will cause the organization to be overstaffed and therefore increase personnel cost. Tharp (1998) also found in his

research the cost effectiveness of overtime usage is directly affected with the addition or vacancy of positions.

Other researchers on the subject have found other methods to reduce overtime expenses. Mims (1999) found in her research that the implementation of a twelve-hour shift or a 10/14-hour type schedule over the 24-hour shift would reduce overtime spending and be more cost effective. The other advantages to consider are these schedules use less sick leave and increase firefighter safety. O'Connell (2000) found sick leave usage to be at an alarming level and is creating increased overtime cost in his organization. Currently, the Riverside Fire Department has extensive sick leave usage and has no sick leave abuse policy in place.

Glazner (1996) discussed improving firefighter safety by lessening the fatigue factor of working long shifts. Personnel within the Riverside Fire Department can work continuous shifts without any time off. This alone has raised great concern with fire department management over safety and liability. Due to Memoranda of Understanding agreements with the RCFA, the Department has limited control over the leaves taken by employees. Personnel assigned to the Operations Division can take an unlimited amount of time off if they can find personnel to cover their shifts. It is not uncommon for personnel to take from one to three months off. Furthermore, and of more concern, is the fact that it is not uncommon for personnel to work 10 to 30 continuous days without a break.

Hiring additional personnel to reduce the overtime expense and decrease the amount of time worked may result in a decrease in morale by employees that have become accustomed to the overtime. Union leadership has concerns about reductions in

overtime citing situations in which their members had lost houses or boats following the curtailing of overtime (Boomgaarden, personal communication, October 12, 2001). The advantages of hiring new personnel to fill positions are substantial. Most importantly, adding new personnel will enable the fire department to enhance its service provision. The department will have more firefighters to provide protection to a growing city. This consideration is particularly crucial in the event of a disaster when the more public safety workers available the better the community will be able to cope with the disaster. Additional personnel will increase the organization's selection pool for promotional opportunities.

The disadvantages of having personnel work overtime to cover positions relates directly to productivity and safety issues. Hiring back personnel can tax the personnel and enhance the potential of illness and injury. Glazner (1996) found that the highest incidents of injuries to firefighters occur from fatigue and disruptive eating patterns. This in turn will increase the number of vacancies on a shift and lead to a greater reliance on overtime to cover vacancies. Also, the effectiveness of a firefighter may be diminished by this practice due to overwork.

The research identified some interesting but expected findings in the factors relating to fatigue and injuries of firefighters working extended hours. Serious consideration must be given to this factor alone when considering overtime and work schedules. The liability exposure for overworked or fatigued firefighters driving and operating emergency vehicles is considerable. Fewer personnel could eventually be a liability risk for the City considering how rapidly the City is growing and how the threat of disaster is constantly increasing. Decreasing the amount of overtime worked will

result in the Department having fresher, more effective workers. These implications alone would outweigh the minimal cost savings by utilizing overtime versus adequate staffing.

The result of the research indicated there was only a cost savings of 43 cents per hour for firefighter, 28 cents for firefighter/paramedic, $1.45 for fire engineer, and 57 cents per hour for fire captain. However this could easily change with the variations experienced in retirement rates. It was discovered, in the historical research of department records, that some years there are no expenses for retirement benefits. Currently retirement benefits are 15.56% of annual salary.

As fire service managers we often struggle in obtaining the necessary financial resources to provide the level of service the community presumes fire agencies will and can provide. This researcher has reached the same conclusion as Laurich (1996) and Perlman (1997) in that managing fire service budgets is a challenging yet taxing endeavor that departments deal with on an annual basis and overtime is one of the most trickiest issues facing state and local governments.

RECOMMENDATIONS

As a result of this research the following recommendations are made in order to address the problem of a tremendous overtime budget that creates concern and continual discussion with city leadership throughout the fiscal year.

1. The first recommendation is to purchase or develop a computer software program that can easily manipulate staffing data in order to evaluate staffing patterns and reasons for overtime. The current staffing data programs do not provide a simple reporting method to review daily staffing. It was extremely time consuming, labor

intensive and technically challenging to abstract and arrange the current staffing data for analysis. As fire service managers it is essential to have the necessary information to substantiate cost effective staffing decisions. This will also allow the Department to effectively address concerns raised by city leadership regarding overtime expenditures.

2. The Department should reinstate the Swing Program that provides relief personnel for those on vacation. This would entail hiring three captains, three engineers, six firefighters, and six firefighter/paramedics. This will reduce the amount of overtime and reduce the amount of hours or long shifts personnel are working. The current cost saving of paying overtime is minimal and should not be weighted against the liabilities of personnel working excessive hours. The potential for injuries and personnel becoming sick due to fatigue greatly increases when personnel work excessive hours. The daily staffing levels should be increased to cover vacation and holiday leaves. Unscheduled absences should be covered with personnel working overtime. That will prevent over-staffing on days when there are no unscheduled leaves. This recommendation should be discussed with the firefighters' union and implemented over an identified period of time. Personnel have become accustomed to the overtime and corresponding salary.

3. The Department should limit the amount of time personnel can work without a break. Currently there are no restrictions on how many hours personnel can work. It was discovered in the research that injuries and sick leave increase as personnel work long shifts. If sick leave increases because of firefighters working excessive overtime that would negate any of the minimal cost savings identified in paying overtime versus hiring additional personnel.

4. The Department should analyze the sick leave usage within the department and compare it to the national average if available. If sick leave abuse is prominent the Department should develop a policy that can address this issue. The research indicated that sick leave programs which have been implemented have reduced usage and overtime. The research of others indicated a strong correlation between sick leave and excessive overtime.

5. In evaluating the overtime usage it was determined that having vacancies of authorized full time personnel created a significant amount of overtime. It is recommended that the Department maintain a current hiring list of potential firefighters. The hiring process should also be completed in a timely fashion to reduce the overtime associated with vacancies. This will significantly reduce the overtime budget.

6. The Department should continue to evaluate the overtime usage and patterns on a semi-annual basis to identify any trends. The benefit charges should also be evaluated on an annual basis to enable the Department to evaluate cost effective staffing methods. With the instability of benefits cost it will be necessary to maintain flexibility to stop overtime when it is determined not to be economical.

7. It is also recommended that a focus group of department members be established to review work schedules in order to determine the optimum work schedule for the department and the personnel. The research indicated alternative work schedules can provide reduction in overtime expenses and improve firefighter safety. The 24-hour schedule may not be the most practical schedule for today's workforce.

Finally, it is recommended for those wishing to duplicate this research that consideration be given to the size of the organization, corresponding staffing data, and

one researchers ability to gather and analyze staffing data. Considerable time was spent obtaining and formulating the data for analysis.

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APPENDIX A

Annual Position Cost

Firefighter Position	**October 2001**	January 2002	July 2002	July 2003
Regular Salary	$ 53,696.88	$ 56,381.72	$ 59,200.81	$ 62,160.85
Workers' Comp (.0394)	$ 2,115.66	$ 2,221.44	$ 2,332.51	$ 2,449.14
Health	$ 5,292.00	$ 5,292.00	$ 5,292.00	$ 5,292.00
Dental	$ 120.00	$ 120.00	$ 120.00	$ 120.00
Life	$ 14.04	$ 14.04	$ 14.04	$ 14.04
PERS (15.56%)	$ 8,355.23	$ 8,773.00	$ 9,211.65	$ 9,672.23
MEDICARE (1.45%)	$ 778.60	$ 817.53	$ 858.41	$ 901.33
Other Insurances	$ 1,106.00	$ 1,106.00	$ 1,106.00	$ 1,106.00
Total Adjusted Compensation	$ 71,478.42	$ 74,725.74	$ 78,135.42	$ 81,715.59
Holiday Coverage	$ 3,628.66	$ 3,810.10	$ 4,000.60	$ 4,200.63
Average Vacation Coverage	$ 4,618.30	$ 4,849.21	$ 5,091.67	$ 5,346.26
Average Sick Leave	$ 1,649.39	$ 1,731.86	$ 1,818.45	$ 1,909.38
Hiring, Uniforms, Safety Gear	$ 4,353.00	**$** 446.25	**$** 468.56	$ 492.00
Total Firefighter Costs	**$ 85,727.77**	**$ 85,587.91**	**$ 89,514.56**	**$ 93,663.85**

Firefighter/Paramedic Position	**October 2001**	January 2002	July 2002	July 2003
Regular Salary	$ 57,908.40	$ 60,803.82	$ 63,844.01	$ 67,036.21
Workers' Comp (.0394)	$ 2,281.59	$ 2,395.67	$ 2,515.45	$ 2,641.23
Health	$ 5,292.00	$ 5,292.00	$ 5,292.00	$ 5,292.00
Dental	$ 120.00	$ 120.00	$ 120.00	$ 120.00
Life	$ 15.08	$ 15.08	$ 15.08	$ 15.08
PERS (15.56%)	$ 9,010.55	$ 9,461.07	$ 9,934.13	$ 10,430.83
MEDICARE (1.45%)	$ 839.67	$ 881.66	$ 925.74	$ 972.03
Other Insurances	$ 1,106.00	$ 1,106.00	$ 1,106.00	$ 1,106.00
Total Adjusted Compensation	$ 76,573.29	$ 80,075.30	$ 83,752.41	$ 87,613.38
Holiday Coverage	$ 3,913.26	$ 4,108.93	$ 4,314.37	$ 4,530.09
Average Vacation Coverage	$ 4,980.52	$ 5,229.54	$ 5,491.02	$ 5,765.57
Average Sick Leave	$ 1,778.76	$ 1,867.69	$ 1,961.08	$ 2,059.13
Hiring, Uniforms, Safety Gear	**$** 4,353.00	$ 446.25	**$** 468.56	$ 492.00
Total Firefighter/Paramedic Costs	**$ 91,598.83**	**$ 91,727.72**	**$ 95,987.44**	**$ 100,460.17**

Engineer Position	**October 2001**	January 2002	July 2002	July 2003
Regular Salary	$ 60,894.00	$ 63,938.70	$ 67,135.64	$ 70,492.42
Workers' Comp (.0394)	$ 2,399.22	$ 2,519.18	$ 2,645.14	$ 2,777.40
Health	$ 5,292.00	$ 5,292.00	$ 5,292.00	$ 5,292.00
Dental	$ 120.00	$ 120.00	$ 120.00	$ 120.00
Life	$ 15.86	$ 15.86	$ 15.86	$ 15.86
PERS (15.56%)	$ 9,475.11	$ 9,948.86	$ 10,446.30	$ 10,968.62
MEDICARE (1.45%)	$ 882.96	$ 927.11	$ 973.47	$ 1,022.14
Other Insurances	$ 1,106.00	$ 1,106.00	$ 1,106.00	$ 1,106.00
Total Adjusted Compensation	$ 80,185.15	$ 83,867.72	$ 87,734.41	$ 91,794.44
Holiday Coverage	$ 4,115.02	$ 4,320.77	$ 4,536.81	$ 4,763.65
Average Vacation Coverage	$ 5,237.30	$ 5,499.16	$ 5,774.12	$ 6,062.83
Average Sick Leave	$ 1,870.46	$ 1,963.99	$ 2,062.19	$ 2,165.30
Uniforms, Safety Gear	$ 425.00	$ 446.25	$ 468.56	$ 492.00
Total Engineer Costs	**$ 95,566.94**	**$ 96,100.89**	**$100,576.09**	**$ 105,278.21**

Captain, Suppression	**October 2001**	January 2002	July 2002	July 2003
Regular Salary	$ 70,490.16	$ 74,014.67	$ 77,715.40	$ 81,601.17
Workers' Comp (.0394)	$ 2,777.31	$ 2,916.18	$ 3,061.99	$ 3,215.09
Health	$ 5,292.00	$ 5,292.00	$ 5,292.00	$ 5,292.00
Dental	$ 120.00	$ 120.00	$ 120.00	$ 120.00
Life	$ 18.20	$ 18.20	$ 18.20	$ 18.20
PERS (15.56%)	$ 10,968.27	$ 11,516.68	$ 12,092.52	$ 12,697.14
MEDICARE (1.45%)	$ 1,022.11	$ 1,073.21	$ 1,126.87	$ 1,183.22
Other Insurances	$ 1,106.00	$ 1,106.00	$ 1,106.00	$ 1,106.00
Total Adjusted Compensation	$ 91,794.05	$ 96,056.94	$100,532.98	$ 105,232.82
Holiday Coverage	$ 4,763.50	$ 5,001.67	$ 5,251.76	$ 5,514.35
Average Vacation Coverage	$ 8,660.91	$ 9,093.95	$ 9,548.65	$ 10,026.08
Average Sick Leave	$ 2,165.23	$ 2,273.49	$ 2,387.16	$ 2,506.52
Uniforms, Safety Gear	**$** 425.00	$ 446.25	**$** 468.56	**$** 492.00
Total Captain Costs	**$ 107,383.68**	**$112,872.31**	**$ 118,188.55**	**$ 123,771.77**

APPENDIX B

OVERTIME STUDY

OVERTIME HOURS PER DAY FOR FIRE CAPTAIN

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	120	60	15	48	36	98	216	120	98	168	48	41
2	39	15	72	60	48	84	24	192	120	72	96	192
3	101	132	48	48	72	48	78	209	48	96	60	55
4	100	48	84	96	84	72	103	90	72	72	170	0
5	65	60	64	50	104	12	89	265	96	96	96	141
6	12	24	114	58	120	48	24	105	74	72	192	24
7	72.5	72	24	72	48	36	120	218	54	168	47	72
8	0	96	12	96	48	48	72	89	168	62	36.5	50
9	48	124.1	48	144	12	96	120	96	154	96	148	120
10	0	220	130	168	57.5	192	144	48	155.5	28	80	120
11	0	72	96.2	120	171	120	153	109	72	96	240	144
12	94	23	17	168	72	48	24	312	104.4	48	123	96
13	144.2	0.5	120	247	216	144	168	96	178	168	56	192
14	72.5	120	144	264	24	56	96	72.75	144	96	147.5	289
15	24	120	192.7	176	120	168	168	96	208.3	144	48	194.5
16	48	144	168	144	144	96	123.3	168	48	72	144	288
17	24	121	168	96.68	120	64.75	96	120	264	24	120	264.5
18	0	144	243	24	122	126	218	262	48	48	213	264
19	97	144	144.2	48	48	146.3	120	170	192	48	48.3	168
20	206.5	67	174	83	144	144.8	168	120	96	24	96	240
21	96	119.5	48	54	24	72	192	144	96	216	144	168.5
22	73	94.35	192.2	120	48	144	121	144	48	48	147.5	192
23	72	24	150.5	172.5	120	204	96	168	168	48	96	168
24	194	288	120	108.5	120	120	156.8	3.62	144	120	240	264
25	168	168	120	48	65	48.75	72	222	168	94.5	96	205
26	96	24	48	96	191.1	120	144	144	24	24	192	193.1
27	168	86.3	84.22	167.8	216	144	168	192	72	97.25	133	120
28	144	48	72	144	120	170.5	192	48	72	168	246	168
29	24	0	174	24	144	264	144	120	72	44	48	240
30	120	0	72	187	48	144	202.8	132	72	72	147	240
31	50.75	0	96	0	168		144	96		192		

FIRE CAPTAIN

OVERTIME HOURS BROKEN DOWN INTO 24-HOUR SHIFTS

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	5.00	2.50	0.63	2.00	1.50	4.08	9.00	5.00	4.08	7.00	2.00	1.71
2	1.63	0.63	3.00	2.50	2.00	3.50	1.00	8.00	5.00	3.00	4.00	8.00
3	4.21	5.50	2.00	2.00	3.00	2.00	3.25	8.71	2.00	4.00	2.50	2.29
4	4.17	2.00	3.50	4.00	3.50	3.00	4.29	3.75	3.00	3.00	7.08	0.00
5	2.71	2.50	2.67	2.08	4.33	0.50	3.71	11.04	4.00	4.00	4.00	5.88
6	0.50	1.00	4.75	2.42	5.00	2.00	1.00	4.38	3.08	3.00	8.00	1.00
7	3.02	3.00	1.00	3.00	2.00	1.50	5.00	9.08	2.25	7.00	1.96	3.00
8	0.00	4.00	0.50	4.00	2.00	2.00	3.00	3.71	7.00	2.58	1.52	2.08
9	2.00	5.17	2.00	6.00	0.50	4.00	5.00	4.00	6.42	4.00	6.17	5.00
10	0.00	9.17	5.42	7.00	2.40	8.00	6.00	2.00	6.48	1.17	3.33	5.00
11	0.00	3.00	4.01	5.00	7.13	5.00	6.38	4.54	3.00	4.00	10.00	6.00
12	3.92	0.96	0.71	7.00	3.00	2.00	1.00	13.00	4.35	2.00	5.13	4.00
13	6.01	0.02	5.00	10.29	9.00	6.00	7.00	4.00	7.42	7.00	2.33	8.00
14	3.02	5.00	6.00	11.00	1.00	2.33	4.00	3.03	6.00	4.00	6.15	12.04
15	1.00	5.00	8.03	7.33	5.00	7.00	7.00	4.00	8.68	6.00	2.00	8.10
16	2.00	6.00	7.00	6.00	6.00	4.00	5.14	7.00	2.00	3.00	6.00	12.00
17	1.00	5.04	7.00	4.03	5.00	2.70	4.00	5.00	11.00	1.00	5.00	11.02
18	0.00	6.00	10.13	1.00	5.08	5.25	9.08	10.92	2.00	2.00	8.88	11.00
19	4.04	6.00	6.01	2.00	2.00	6.09	5.00	7.08	8.00	2.00	2.01	7.00
20	8.60	2.79	7.25	3.46	6.00	6.03	7.00	5.00	4.00	1.00	4.00	10.00
21	4.00	4.98	2.00	2.25	1.00	3.00	8.00	6.00	4.00	9.00	6.00	7.02
22	3.04	3.93	8.01	5.00	2.00	6.00	5.04	6.00	2.00	2.00	6.15	8.00
23	3.00	1.00	6.27	7.19	5.00	8.50	4.00	7.00	7.00	2.00	4.00	7.00
24	8.08	12.00	5.00	4.52	5.00	5.00	6.53	0.15	6.00	5.00	10.00	11.00
25	7.00	7.00	5.00	2.00	2.71	2.03	3.00	9.25	7.00	3.94	4.00	8.54
26	4.00	1.00	2.00	4.00	7.96	5.00	6.00	6.00	1.00	1.00	8.00	8.05
27	7.00	3.60	3.51	6.99	9.00	6.00	7.00	8.00	3.00	4.05	5.54	5.00
28	6.00	2.00	3.00	6.00	5.00	7.10	8.00	2.00	3.00	7.00	10.25	7.00
29	1.00	0.00	7.25	1.00	6.00	11.00	6.00	5.00	3.00	1.83	2.00	10.00
30	5.00	0.00	3.00	7.79	2.00	6.00	8.45	5.50	3.00	3.00	6.13	10.00
31	2.11	0.00	4.00	0.00	7.00	0.00	6.00	4.00	0.00	8.00	0.00	0.00

OVERTIME HOURS PER DAY FOR FIRE ENGINEER

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	132	57	51	83	36	60	144	96	97	117	0	97
2	72	48	132	84	48	72	168	216	168	24	24	216
3	59	89	108	84	72	84	105	96	120	24	12	79
4	103	72	60	96	48	36	222	216	72	59	168	96
5	63	29	76	72	24	36	48	218	120	30	192	79
6	96	96	48	36	84	72	72	250	48	120	96	144
7	120.2	0	12	264	24	24	120	150	73	192	75	199
8	144	60	36	36	72	36	181	240	144	192	72	120
9	15	168.8	160.5	104	48	36	168	168	150	72	48	144
10	99	96	48	96	72	100	192	12	133.5	96	24	168
11	136.5	96	272.6	135.3	85.5	96	233	87	140	103	120	204
12	81	61.5	96	48.25	144	62	168	312	168	144	72	110.5
13	168.2	72.5	70	98	168	54	116.6	122	48	240	152	207.5
14	96.5	2	216	96	103	120	232.5	120.5	192	120	98.5	138
15	288	147	0	216	96	24	173.5	144	48.25	264	48	74.4
16	10	142.9	144	99	1	134	168.1	100	216	96	72	245.5
17	168	144	120	61.1	76	106.8	192	360	24	168	120	96
18	48	72	228.3	72	82.25	101.8	130	144	35.25	0	69.4	168.8
19	49.5	96	72.2	37	216	73.08	98	336	72	216	48	216
20	192	55.5	158	144	72	192.3	72	192	0	130	72	191
21	96	98	192	120.2	120	144.5	48	169.5	96	192	72	264
22	48	73.4	102.5	168	48.25	192	160.5	120	192	144	192.3	264
23	120	170	192	72	75	96	0	144	120	0	48	360
24	120	192.2	216	96	115.5	144	122	171.6	72	51	120	96
25	24	144	48	98.5	120	158.3	96	264	120	24	168	256.3
26	96	195	40.5	72	192.2	72	96	396	120	192	167	49.1
27	48	176.1	48	168	171	192	192	288	96	144.5	120	216
28	193	124	48	192	192	76	234	72	48	120	0	96
29	24		105.5	144	24	266.5	192	93.5	108	242.5	0	216
30	48.5		120	72	3	240	251.3	96	120	96	50.5	192
31	120	0	125	0	96	0	144	24		78.5		

FIRE ENGINEER

OVERTIME HOURS BROKEN DOWN INTO 24-HOUR SHIFTS

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	5.50	2.38	2.13	3.46	1.50	2.50	6.00	4.00	4.04	4.88	0.00	4.04
2	3.00	2.00	5.50	3.50	2.00	3.00	7.00	9.00	7.00	1.00	1.00	9.00
3	2.46	3.71	4.50	3.50	3.00	3.50	4.38	4.00	5.00	1.00	0.50	3.29
4	4.29	3.00	2.50	4.00	2.00	1.50	9.25	9.00	3.00	2.46	7.00	4.00
5	2.63	1.21	3.17	3.00	1.00	1.50	2.00	9.08	5.00	1.25	8.00	3.29
6	4.00	4.00	2.00	1.50	3.50	3.00	3.00	10.42	2.00	5.00	4.00	6.00
7	5.01	0.00	0.50	11.00	1.00	1.00	5.00	6.25	3.04	8.00	3.13	8.29
8	6.00	2.50	1.50	1.50	3.00	1.50	7.54	10.00	6.00	8.00	3.00	5.00
9	0.63	7.03	6.69	4.33	2.00	1.50	7.00	7.00	6.25	3.00	2.00	6.00
10	4.13	4.00	2.00	4.00	3.00	4.17	8.00	0.50	5.56	4.00	1.00	7.00
11	5.69	4.00	11.36	5.64	3.56	4.00	9.71	3.63	5.83	4.29	5.00	8.50
12	3.38	2.56	4.00	2.01	6.00	2.58	7.00	13.00	7.00	6.00	3.00	4.60
13	7.01	3.02	2.92	4.08	7.00	2.25	4.86	5.08	2.00	10.00	6.33	8.65
14	4.02	0.08	9.00	4.00	4.29	5.00	9.69	5.02	8.00	5.00	4.10	5.75
15	12.00	6.13	0.00	9.00	4.00	1.00	7.23	6.00	2.01	11.00	2.00	3.10
16	0.42	5.95	6.00	4.13	0.04	5.58	7.00	4.17	9.00	4.00	3.00	10.23
17	7.00	6.00	5.00	2.55	3.17	4.45	8.00	15.00	1.00	7.00	5.00	4.00
18	2.00	3.00	9.51	3.00	3.43	4.24	5.42	6.00	1.47	0.00	2.89	7.03
19	2.06	4.00	3.01	1.54	9.00	3.05	4.08	14.00	3.00	9.00	2.00	9.00
20	8.00	2.31	6.58	6.00	3.00	8.01	3.00	8.00	0.00	5.42	3.00	7.96
21	4.00	4.08	8.00	5.01	5.00	6.02	2.00	7.06	4.00	8.00	3.00	11.00
22	2.00	3.06	4.27	7.00	2.01	8.00	6.69	5.00	8.00	6.00	8.01	11.00
23	5.00	7.08	8.00	3.00	3.13	4.00	0.00	6.00	5.00	0.00	2.00	15.00
24	5.00	8.01	9.00	4.00	4.81	6.00	5.08	7.15	3.00	2.13	5.00	4.00
25	1.00	6.00	2.00	4.10	5.00	6.59	4.00	11.00	5.00	1.00	7.00	10.68
26	4.00	8.13	1.69	3.00	8.01	3.00	4.00	16.50	5.00	8.00	6.96	2.05
27	2.00	7.34	2.00	7.00	7.13	8.00	8.00	12.00	4.00	6.02	5.00	9.00
28	8.04	5.17	2.00	8.00	8.00	3.17	9.75	3.00	2.00	5.00	0.00	4.00
29	1.00	0.00	4.40	6.00	1.00	11.10	8.00	3.90	4.50	10.10	0.00	9.00
30	2.02	0.00	5.00	3.00	0.13	10.00	10.47	4.00	5.00	4.00	2.10	8.00
31	5.00	0.00	5.21	0.00	4.00	0.00	6.00	1.00	0.00	3.27	0.00	0.00

OVERTIME HOURS PER DAY FOR FIREFIGHTER

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	192	123	120	144	60	36	322	288	193	120	168	312
2	144	96	108	120	120	96	238	432	144	144	144	168
3	88	156	132	120	72	24	207	336	300	120	168	192
4	215	132	120	84	84	96	328	350	168	120	192	166
5	137	168	88	140	156	36	226	288	168	132	240	177
6	180	120	111	132	108	84	149	250	180	216	144	170
7	168	120	96	264	60	48	168	192	144	305	161	337
8	168	288	120	156	0	72	288	264	264	120	72	240
9	144	143.3	96	72		76.5	240	221	168	96	96	216
10	216	240	288	146	75.5	120	144	48	253.8	144	120	168
11	192.2	72	120.6	111.3	96	122.5	156	242.5	216	96	216	240
12	192	179.5	144	168	129.5	35	216	156	204	192	168	120.3
13	216	133	144	192	192	176.5	176	192	168	288	120	312
14	192	245	192	280.3	96	72	192.3	144	192	262.8	92	144
15	192	192	120.8	144	144	192	216	192	153.3	204	168	256.9
16	120	206.5	222	105	24	72	312	120	288	168	216	336
17	168	138	129.3	216.4	192	178.6	144	164	168	192	120	267.8
18	96	169	207.3	96	96	140.3	228	168	144	120	192	264
19	322	144	120	144	144	168.9	190.5	288	192	240	288	202.5
20	168	72	168	167.5	120	72.75	164	216	144.3	216	120	240
21	270	144	168	168	96	192.8	168	144	144	192	120	305.8
22	48	144	168.2	144	96.25	96	288	168	202.3	144	172.8	408.3
23	170.6	216	216	216	120	264	144	319.8	216	168	288.2	264
24	163.8	216	168	96	99.5	24	194	220.8	216	144	222.3	312
25	168	236	168	144	120.2	135	192	288	144	120	144	247.8
26	120	168	168	120	168.2	48	216	264	182.6	144	384	265.5
27	168	120	192.2	72	120	105.3	164	264	120	144.5	120	96
28	240	120	144	120	168	100	312	192	192	264	168	250.3
29	104		144	54	247	96	384	173.5	144	264	120	144.5
30	192.5		168	144	120	120	322.8	192	168	120	217	274.5
31	120	0	94	0	82		378	168		120		

FIREFIGHTER

OVERTIME HOURS BROKEN DOWN INTO 24-HOUR SHIFTS

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	8.00	5.13	5.00	6.00	2.50	1.50	13.42	12.00	8.04	5.00	7.00	13.00
2	6.00	4.00	4.50	5.00	5.00	4.00	9.92	18.00	6.00	6.00	6.00	7.00
3	3.67	6.50	5.50	5.00	3.00	1.00	8.63	14.00	12.50	5.00	7.00	8.00
4	8.96	5.50	5.00	3.50	3.50	4.00	13.67	14.58	7.00	5.00	8.00	6.92
5	5.71	7.00	3.67	5.83	6.50	1.50	9.42	12.00	7.00	5.50	10.00	7.38
6	7.50	5.00	4.63	5.50	4.50	3.50	6.21	10.42	7.50	9.00	6.00	7.08
7	7.00	5.00	4.00	11.00	2.50	2.00	7.00	8.00	6.00	12.71	6.71	14.04
8	7.00	12.00	5.00	6.50	0.00	3.00	12.00	11.00	11.00	5.00	3.00	10.00
9	6.00	5.97	4.00	3.00	0.00	3.19	10.00	9.21	7.00	4.00	4.00	9.00
10	9.00	10.00	12.00	6.08	3.15	5.00	6.00	2.00	10.57	6.00	5.00	7.00
11	8.01	3.00	5.03	4.64	4.00	5.10	6.50	10.10	9.00	4.00	9.00	10.00
12	8.00	7.48	6.00	7.00	5.40	1.46	9.00	6.50	8.50	8.00	7.00	5.01
13	9.00	5.54	6.00	8.00	8.00	7.35	7.33	8.00	7.00	12.00	5.00	13.00
14	8.00	10.21	8.00	11.68	4.00	3.00	8.01	6.00	8.00	10.95	3.83	6.00
15	8.00	8.00	5.03	6.00	6.00	8.00	9.00	8.00	6.39	8.50	7.00	10.70
16	5.00	8.60	9.25	4.38	1.00	3.00	13.00	5.00	12.00	7.00	9.00	14.00
17	7.00	5.75	5.39	9.02	8.00	7.44	6.00	6.83	7.00	8.00	5.00	11.16
18	4.00	7.04	8.64	4.00	4.00	5.85	9.50	7.00	6.00	5.00	8.00	11.00
19	13.42	6.00	5.00	6.00	6.00	7.04	7.94	12.00	8.00	10.00	12.00	8.44
20	7.00	3.00	7.00	6.98	5.00	3.03	6.83	9.00	6.01	9.00	5.00	10.00
21	11.25	6.00	7.00	7.00	4.00	8.03	7.00	6.00	6.00	8.00	5.00	12.74
22	2.00	6.00	7.01	6.00	4.01	4.00	12.00	7.00	8.43	6.00	7.20	17.01
23	7.11	9.00	9.00	9.00	5.00	11.00	6.00	13.32	9.00	7.00	12.01	11.00
24	6.82	9.00	7.00	4.00	4.15	1.00	8.08	9.20	9.00	6.00	9.26	13.00
25	7.00	9.83	7.00	6.00	5.01	5.63	8.00	12.00	6.00	5.00	6.00	10.33
26	5.00	7.00	7.00	5.00	7.01	2.00	9.00	11.00	7.61	6.00	16.00	11.06
27	7.00	5.00	8.01	3.00	5.00	4.39	6.83	11.00	5.00	6.02	5.00	4.00
28	10.00	5.00	6.00	5.00	7.00	4.17	13.00	8.00	8.00	11.00	7.00	10.43
29	4.33	0.00	6.00	2.25	10.29	4.00	16.00	7.23	6.00	11.00	5.00	6.02
30	8.02	0.00	7.00	6.00	5.00	5.00	13.45	8.00	7.00	5.00	9.04	11.44
31	5.00	0.00	3.92	0.00	3.42	0.00	15.75	7.00	0.00	5.00	0.00	0.00

OVERTIME HOURS PER DAY FOR FIREFIGHTER/ PARAMEDIC

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	72	24	149	36	60	36	96	120	49	24	0	72
2	36	24	48	24	60	72	72	72	0	50	0	24
3	36	48	48	24	72	36	96	72	36	48	0	48
4	12	12	72	0	48	36	72	96	0	48	48	64
5	62	0	73	24	84	72	120	98	96	120	24	96
6	48	48	258	96	60	36	96	120	0	60	108	29
7	61	24	89	96	48	60	96	72	48	168	39	96
8	48	48	141	120	24	24	84	72	48	120	72.5	72
9	48	120.5	161	96	72	72	96	120	72	192	110	60
10	24	24	96	144.5	72	72	72	24	144	168.8	72	48
11	24.5	96	72.2	24	48	72	48	96	216	48	120	36
12	96.8	31	96	168	96	48	72	96	192	0	24	72
13	24.14	144	192	28	72	72	144.5	72	19	66	72	48
14	25.25	27.5	124	72	72	32	96.25	96.5	142.8	0	95.2	119.3
15	18.5	48	72.65	144	119	120	216	72	48.25	240.5	113	96.6
16	24	72.17	0	48	119	48	144	72	192	24	34	144
17	25.4	120	132	25.1	141	120	144	192	42	240	96.5	145
18	24	144	98.2	96	168	102	72	72	48	69	48	25
19	48.2	24	96	24	72	84.75	100.3	120	72	192	96	24
20	24	72	36	72	168	112.8	96	0	24	24	24	0
21	96.5	24	108	72	76	74.25	120	48	72	168	144	48
22	24.13	96	24	96	96	113	120	120	24	72	48	96.25
23	48.1	80	84.5	24	48.5	48	72	48	97.7	108	24	96
24	24	168.5	144	24	72	192	217.5	48	72	192	21	144
25	96	120	48	99	48.17	48.75	96	144	161.2	120	72	73.75
26	96	128.3	79	120	72	96	164	120	109	144	192	73.1
27	96	72	96.22	41.5	120	96	147	72	114	96.83	48	96
28	0	72	72	144.5	24	74	144	120	132.5	52	0.67	120.5
29	24		24.5	82.34	120	96	120	48	165.5	96	168	120
30	24.5		152	48	28	72	144	120	48	24	4.5	119.5
31	24	0	24	0	96	0	96	120		48		

FIREFIGHTER/PARAMEDIC

OVERTIME HOURS BROKEN DOWN INTO 24-HOUR SHIFTS

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3.00	1.00	6.21	1.50	2.50	1.50	4.00	5.00	2.04	1.00	0.00	3.00
2	1.50	1.00	2.00	1.00	2.50	3.00	3.00	3.00	0.00	2.08	0.00	1.00
3	1.50	2.00	2.00	1.00	3.00	1.50	4.00	3.00	1.50	2.00	0.00	2.00
4	0.50	0.50	3.00	0.00	2.00	1.50	3.00	4.00	0.00	2.00	2.00	2.67
5	2.58	0.00	3.04	1.00	3.50	3.00	5.00	4.08	4.00	5.00	1.00	4.00
6	2.00	2.00	10.75	4.00	2.50	1.50	4.00	5.00	0.00	2.50	4.50	1.21
7	2.54	1.00	3.71	4.00	2.00	2.50	4.00	3.00	2.00	7.00	1.63	4.00
8	2.00	2.00	5.88	5.00	1.00	1.00	3.50	3.00	2.00	5.00	3.02	3.00
9	2.00	5.02	6.71	4.00	3.00	3.00	4.00	5.00	3.00	8.00	4.58	2.50
10	1.00	1.00	4.00	6.02	3.00	3.00	3.00	1.00	6.00	7.03	3.00	2.00
11	1.02	4.00	3.01	1.00	2.00	3.00	2.00	4.00	9.00	2.00	5.00	1.50
12	4.03	1.29	4.00	7.00	4.00	2.00	3.00	4.00	8.00	0.00	1.00	3.00
13	1.01	6.00	8.00	1.17	3.00	3.00	6.02	3.00	0.79	2.75	3.00	2.00
14	1.05	1.15	5.17	3.00	3.00	1.33	4.01	4.02	5.95	0.00	3.97	4.97
15	0.77	2.00	3.03	6.00	4.96	5.00	9.00	3.00	2.01	10.02	4.71	4.03
16	1.00	3.01	0.00	2.00	4.96	2.00	6.00	3.00	8.00	1.00	1.42	6.00
17	1.06	5.00	5.50	1.05	5.88	5.00	6.00	8.00	1.75	10.00	4.02	6.04
18	1.00	6.00	4.09	4.00	7.00	4.25	3.00	3.00	2.00	2.88	2.00	1.04
19	2.01	1.00	4.00	1.00	3.00	3.53	4.18	5.00	3.00	8.00	4.00	1.00
20	1.00	3.00	1.50	3.00	7.00	4.70	4.00	0.00	1.00	1.00	1.00	0.00
21	4.02	1.00	4.50	3.00	3.17	3.09	5.00	2.00	3.00	7.00	6.00	2.00
22	1.01	4.00	1.00	4.00	4.00	4.71	5.00	5.00	1.00	3.00	2.00	4.01
23	2.00	3.33	3.52	1.00	2.02	2.00	3.00	2.00	4.07	4.50	1.00	4.00
24	1.00	7.02	6.00	1.00	3.00	8.00	9.06	2.00	3.00	8.00	0.88	6.00
25	4.00	5.00	2.00	4.13	2.01	2.03	4.00	6.00	6.72	5.00	3.00	3.07
26	4.00	5.34	3.29	5.00	3.00	4.00	6.83	5.00	4.54	6.00	8.00	3.05
27	4.00	3.00	4.01	1.73	5.00	4.00	6.13	3.00	4.75	4.03	2.00	4.00
28	0.00	3.00	3.00	6.02	1.00	3.08	6.00	5.00	5.52	2.17	0.03	5.02
29	1.00	0.00	1.02	3.43	5.00	4.00	5.00	2.00	6.90	4.00	7.00	5.00
30	1.02	0.00	6.33	2.00	1.17	3.00	6.00	5.00	2.00	1.00	0.19	4.98
31	1.00	0.00	1.00	0.00	4.00	0.00	4.00	5.00	0.00	2.00	0.00	0.00